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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,963	07/23/2001	James B. Terry	1391-10210	7967
23505	7590	04/05/2004	EXAMINER	
CONLEY ROSE, P.C. P. O. BOX 3267 HOUSTON, TX 77253-3267			LEE, JONG SUK	
			ART UNIT	PAPER NUMBER
			3673	

DATE MAILED: 04/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/911,963

Applicant(s)

TERRY ET AL.

Examiner

Jong-Suk (James) Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3, 7, 10-13, 15, 17, 18, 20-25, 33-35, 38-62 and 64-74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 64-67 and 71 is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 11-13, 15, 17, 18, 20-25, 33-35, 38-53, 55-62, 68-70, 72-74 is/are rejected.
- 7) ☒ Claim(s) 10 and 54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The amendment filed February 2, 2004 has been entered.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103<sup>o</sup> and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 12, 13, 15, 17, 18, 20, 21, 23-25, 33-35, 38-52, 55, 56, 57, 61, 62, 68-70 and 72-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dorel (US 6,047,784) in view of Thomeer et al.'003 (US 5,828,003).

Dorel disclose an apparatus for directional drilling comprising: a coiled tubing/tube (20) which is a tube/string of tubular members, data transmission conductor/electrical control wireline (5); a drill bit/ a member of displacing formation (15); a bottom hole assembly (21) attached to the downhole to the string and to the well apparatus/logging tool (18), the bottom hole assembly including a propulsion system/prime mover/drilling assembly (11) with a power section/mud

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motor (13) which is powered by the fluids circulating through the coiled tubing; a steering assembly/bend housing (12) with an electric motor (24) to adjust a bend angle with a universal joint (90), the direction of drilling can be altered by the operation of the bend housing serving as a three dimensional steering apparatus (see Figs. 1-4; col.3, lines 16-67; col.4, lines 1-67; col.5, lines 1-67; col.6, lines 1-67; col.7, lines 1-67; col.8, lines 1-33).

However, Dorel fails to disclose or fairly suggest the coiled tubing is a composite pipe including fibers wrapped in a predetermined pattern around the liner of the composite tube. Thomeer et al.'003 discloses a composite coiled tubing comprising of a liner (76, 91, 99) with a flowbore and layers of fibers (77-79, 92-95, 101-109) wrapped in a predetermined braided pattern around the liner (76, 91, 99), a number of power conductors (105, 107) as depicted in Fig. 6e and/or a conductor or fiber may be intrinsically manufactured in the composite coiled tubing (see col.11, lines 12-34 and col.12, lines 43-58) and the layers of fibers may carry axial/tensile loads to the composite tubing; wherein a downhole assembly/tool (20) being connected to the composite tubing (see Figs. 1-29; col.6, lines 4-33; col.7, lines 12-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Dorel's coiled tubing with the composite tubing as taught by Thomeer et al.'003 in order to enhance the axial/tensile resistance for the composite tubing and provide the space for flowing drilling fluid without interruption of the electric conductor lines.

With respect to the range of the modulus of elasticity, yield strain, yield stress of the composite tubing and the pulling force on the string by means of the propulsion system, an artisan within the ordinary skill in the art would have provided such a range as claimed in order to enhance the directional drilling capability and control.

4. Claims 2 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dorel as modified by Thomeer et al.'003, as applied to claim 17, and further in view of Dismukes (US 4,646,856). The teachings of Dorel modified by Thomeer et al.'003 have been discussed above.

However, The teachings of Dorel modified by Thomeer et al.'003 fails to disclose or fairly suggest the string of tubular members engineered to cause the string to achieve neutral buoyancy in the fluids of the well and the specific density of the umbilical composites. Dismukes discloses tubulars for directional drilling comprising of drill string/conduit, the conduit including the cylinder designed to provide flotation to the conduit to cause it to be neutrally buoyant in drilling fluid of the well (see Figs. 7-10; col.5, lines 30-56).

Therefore, in view of Dismuke, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the composite tube of Dorel, as modified by Thomeer et al.'003, by including the cylinder in order to provide substantial neutral buoyancy to the umbilical in the drilling fluids.

5. Claims 3, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dorel as modified by Thomeer et al.'003, as applied to claim 1, further in view of Williams et al. (US 5,913,337). The teachings of Dorel modified by Thomeer et al.'003 have been discussed above.

However, the teachings of Dorel modified by Thomeer et al.'003 fail to disclose the range of Young's modulus and density of the composite umbilical and a metallic conductor embedded in a wall of the composite umbilical. Williams et al.'337 disclose a spoolable composite tubular member with energy conductors comprising of a composite umbilical including non-metallic/fibers having a modulus of elasticity which is 100,000 psi or greater, and including the

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metallic conductor (21) embedded in the wall of the composite umbilical (see Fig. 11; col.3, lines 4-10; col.4, lines 25-34; col.12, lines 46-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the composite tube of Dorel, as modified by Thomeer et al.'003, by replacing with the composite umbilical tube having a metallic conductor and a desired modulus of elasticity as taught by Williams et al.'337 in order to enhance stiffness of the composite umbilical by providing a uni-directional longitudinal stiffening material in the opposite sidewalls of the composite umbilical and still provide a desired elasticity limit.

With respect to the density parameters for the composite umbilical, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Dorel's tubing modified by Thomeer et al.'003 with a certain density in order to provide a tube that is light and easy to handle in spooling the composite umbilical.

6. Claims 22, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dorel as modified by Thomeer et al.'003, as applied to claim 21, further in view of Colin et al.'145. The teachings of Dorel modified by Thomeer et al.'003 have been discussed above.

However, the teachings of Dorel modified by Thomeer et al.'003 fail to disclose a connector for connecting lengths of the pipe. Colin et al.'145 disclose a connection device for a cable incorporating optical fibers and metal conductors including the connector assembly as depicted in Fig. 1 (see Figs.1-3; col.2, lines 1-35).

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Therefore, in view of Colin et al.'145, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the composite tube of Dorel, as modified by Thomeer et al.'003 by adding the connector device between the end of the composite umbilical in order to efficiently provide the required length of the umbilical composite at the site.

7. Claims 53 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dorel as modified by Thomeer et al.'003, as applied to claim 17 and 21 respectively, further in view of Wu (US 5,438,267). The teachings of Dorel modified by Thomeer et al.'003 have been discussed above.

However, the teachings of Dorel modified by Thomeer et al.'003 fails to disclose a resistivity antenna being connected to the electronic section of the bottom hole assembly. Wu discloses a bottom hole assembly including a processor/electronic section (51) having an resistivity antenna as receivers (22, 26) to measure the resistivity of the well (see Fig. 1; col. 5, lines 21-68; col.6, lines 1-20; col.8, lines 1-19).

Therefore, in view of Wu, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the bottom hole assembly of Dorel, as modified by Thomeer et al.'003 by adding the receiver and processor to the system in order to enhance the control of the bottom hole assembly.

### ***Response to Arguments***

8. I) Applicant's arguments with respect to Dorel reference that a drilling assembly (11) is

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not a prime mover and instead, an injection head (6) forces the drilling assembly downhole, are not persuasive because the drilling assembly having a mud motor rotating the drill bit by means of drilling fluid so that the drilling assembly drive the drilling apparatus downhole and is served as the "prime mover" and the injection head may be served as a winding-up tool for the coil tubings from the hole.

II) With respect to the combination of Dorel and Thomeer'003 regarding the fiber wrapped composite tubing, the Thomeer et al'003's composite coiled tubing which will stand compression loads by a tubing injector to prevent buckling so that it is designed not for the tension loads but for the compression loads for the coiled tubing, the composite tubing of Thomeer et al'003 undergoes numerous bending events each item is run into and out of the wellbore and it goes into tubing injector for entry into the wellbore, each bending/buckling event is repeated in reverse when the tubing is later extracted (pulled) from the well bore as mentioned in col.6, lines 24-33 in Thomeer et al.'003. Therefore, the modification of Dorel's coiled tubing by the fiber-wrapped composite coiled tubing would be obvious to one of ordinary skill in the art insofar as the composite coiled tubing may be a substitute for drilling pipe in drilling and conducting operations inside well bore as mentioned in col.1, lines 25-39.

III) With respect to Colin et al'145 reference which does not have a connector for the power conductor, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have such a conventional connection of the Colin's connector for the conductor insofar as Thomeer et al.'003's power conductors are provided to the modified composite coiled tubing.

IV) With respect to arguments as to Wu'267 reference that the resistivity antenna is not

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disposed in the propulsion system, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have such a conventional resistivity antenna in the bottomhole assembly or propulsion system such as a prime mover in order to measure the resistivity in well.

V) Applicant's arguments with respect to claim 2 have been considered but are moot in view of the new ground(s) of rejection.

VI) Applicant's argument regarding claims 10 and 54 are persuasive and art rejections for these claims are withdrawn.

#### ***Allowable Subject Matter***

9. Claims 10 and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 64-67 and 71 would be allowable over the prior art of record.

#### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jong-Suk (James) Lee whose telephone number is (703) 308-6777. The examiner can normally be reached on 6:30 am to 3:00 pm, Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather C. Shackelford can be reached on (703) 308-2978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J. Lee /jjl  
April 1, 2004



**Jong-Suk (James) Lee**  
**Primary Examiner**  
**Art Unit 3673**